

Planned Air Pollution Research

Fiscal Year 2006-2007

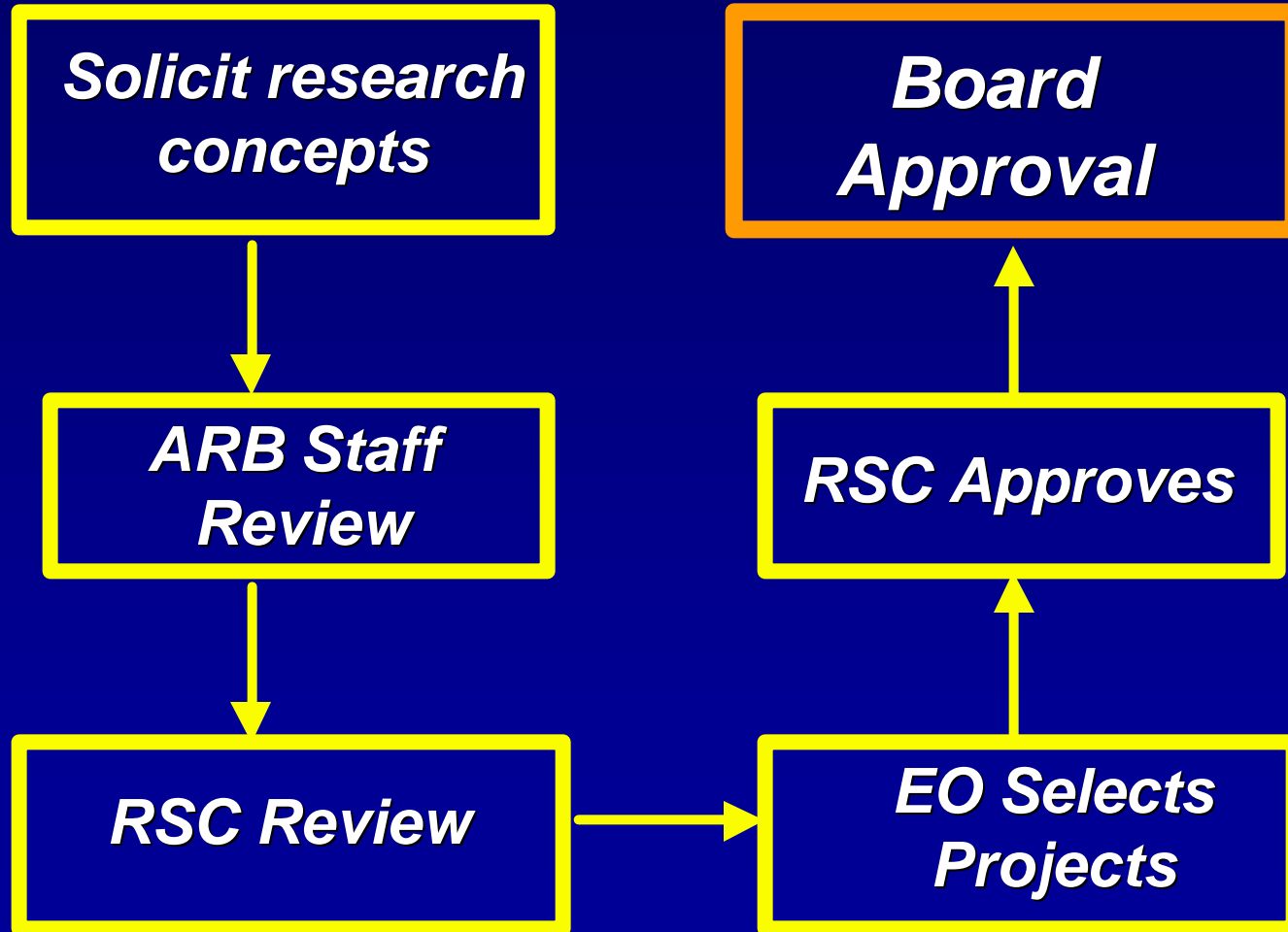
July 20, 2006

California Environmental Protection Agency



Air Resources Board

Research Planning Process



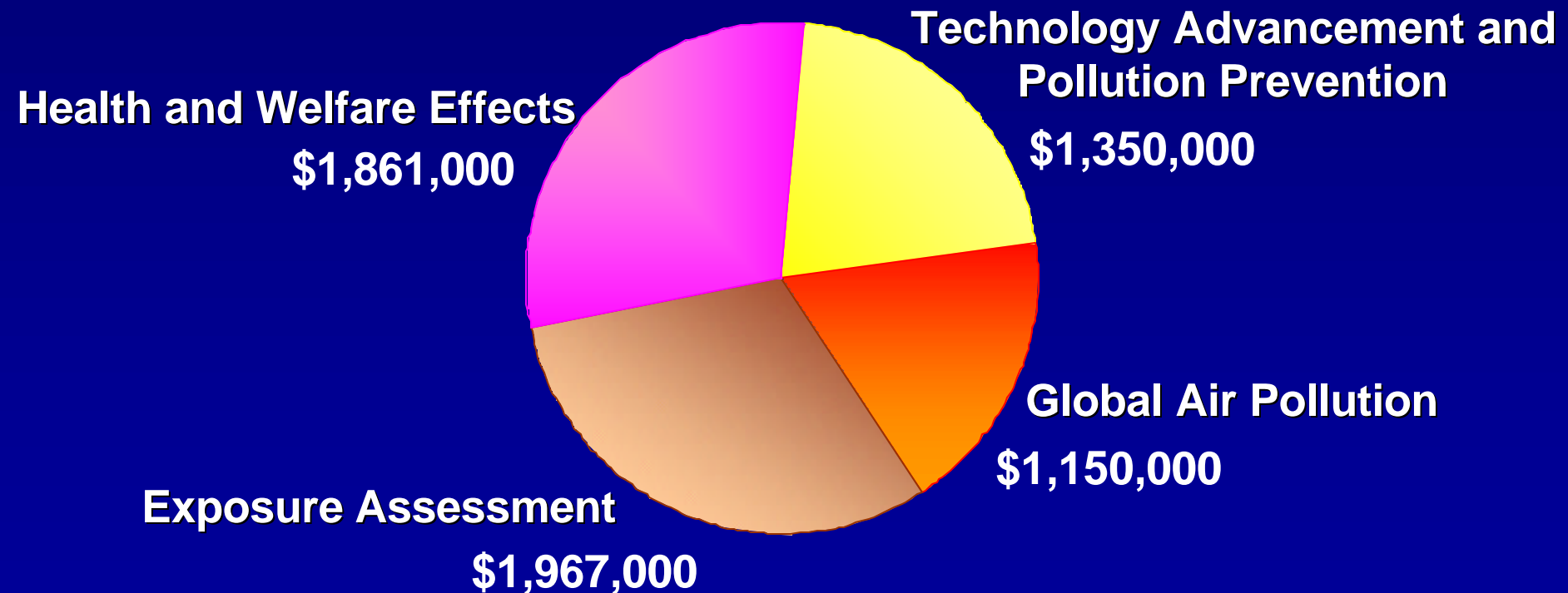
Categories

- **Health and Welfare Effects**
- **Exposure Assessment**
- **Technology Advancement and Pollution Prevention**
- **Global Air Pollution**

Funding Allocations

(RD's baseline budget plus cofunding)

\$6,328,000



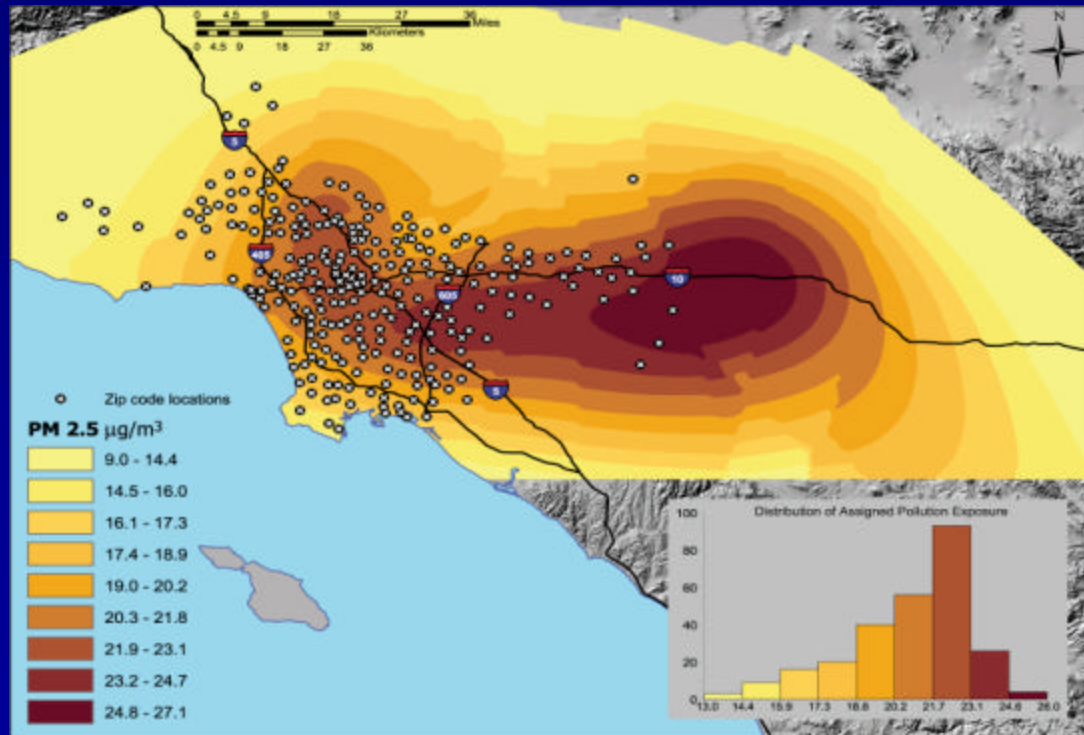
Health and Welfare Effects Projects

Health Effects from PM

- Source-oriented ambient aerosol biosampling & toxicology (\$761,000)**
- Assess particulate air pollution and mortality using American Cancer Society cohort (\$750,000)**
- Estimate air pollution exposure in the analysis of mortality using California Teachers cohort (\$225,000)**

Investigating Particulate Air Pollution and Mortality in the American Cancer Society Cohort

Interpolated Surface of PM_{2.5}



What is the relationship between air pollution and premature death in California?

Exposure Assessment Projects

Atmospheric Processes

- **Develop universal land use regression model for ambient air pollution concentrations (\$250,000)**
- **Deploy aerosol mobility/mass spectrometer for chemical analysis from mobile sources (\$240,000)**
- **Measure air pollution contributions from specific sources using isotope ratios and marker compounds (\$427,000)**

Exposure Assessment Projects

(continued)

Emission Inventory

- Improve California models with inverse modeling techniques and satellite measurements (\$350,000)
- Investigate offshore ship emissions (\$50,000)
- Conduct flux measurements of biogenic precursors in the central valley (\$400,000)

Personal Exposure

- Characterize near-field exposures from distributed combustion sources (\$250,000)

Observational Investigation of Offshore Ship Emissions



What is the nature and magnitude of emissions from offshore shipping?



Technology Advancement and Pollution Prevention Projects

Enhanced Emission Monitoring

- **Low-cost particle monitor for EJ applications (\$250,000)**
- **Identify control technologies for ocean-going vessels (\$150,000)**
- **Update solvent cleaning emissions inventory (\$200,000)**
- **Assess biodiesel fuel emissions (\$350,000)**
- **Reformulate engine lubricating oil to reduce PM emissions (\$400,000)**

PM Emissions from Engine Lubricating Oil



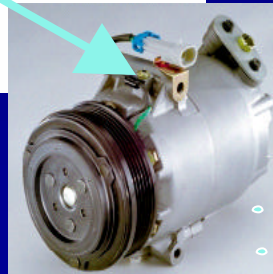
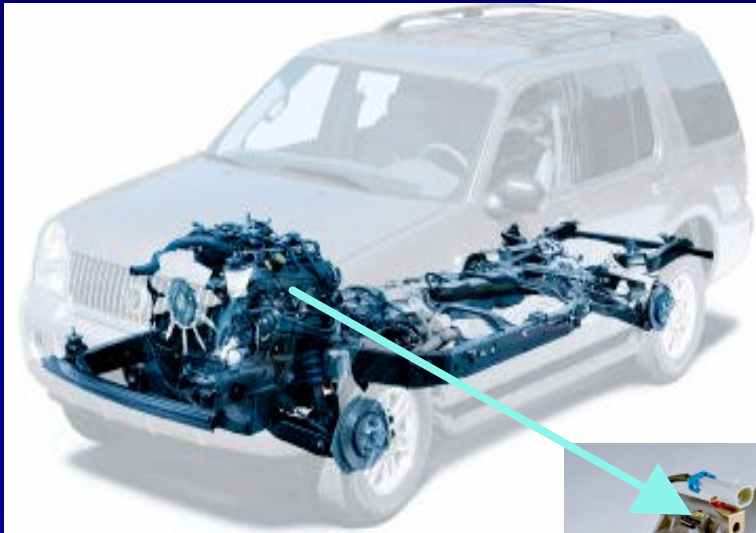
**How can lube oil
be reformulated to
reduce mobile
source PM
emissions?**

Global Air Pollution

Climate Change

- Lifecycle analysis of ARB's climate change reduction strategies (\$200,000)
- Impact of climate change on temperature inversions (\$250,000)
- Refrigerant inventory and use from commercial refrigeration (\$250,000)
- HFC-134a inventory work (\$450,000) will include:
 - emissions from auto dismantling
 - use in heavy-duty vehicles
 - emissions from non-professional A/C servicing

Inventory Improvement and Mitigation of HFCs



A/C compressor

HFCs

CO₂

How much HFC-134a is being emitted, from where, and how do we reduce its impact?

Recommendation

**Approval of the
Planned Air Pollution Research
Fiscal Year 2006-07**

AIR POLLUTION RESEARCH

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